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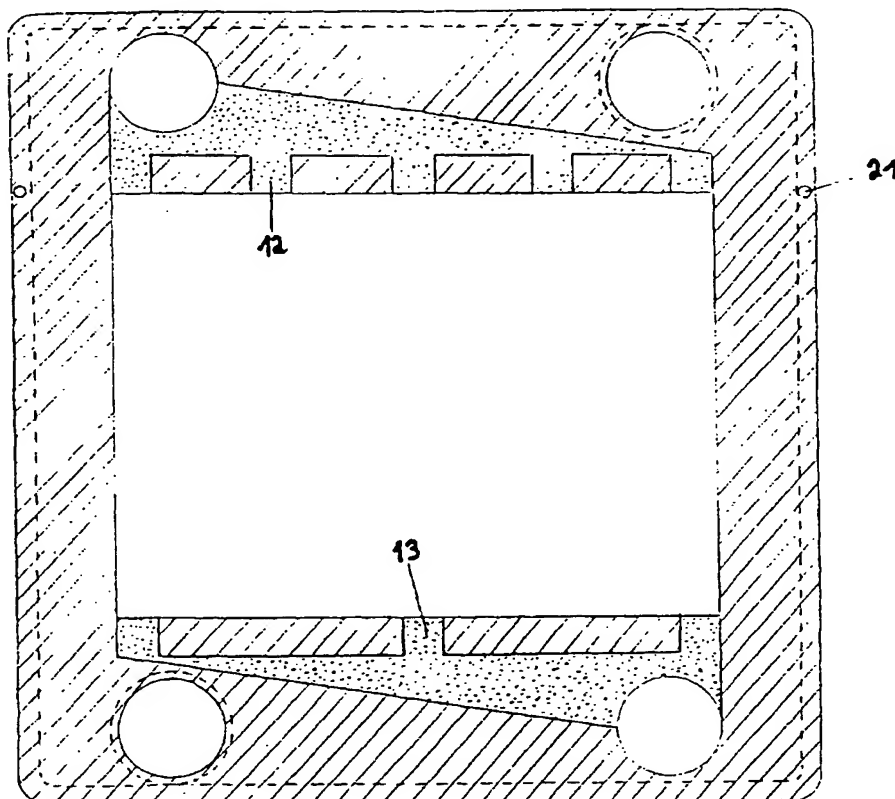
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YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: **ELECTROCHEMICAL GENERATOR WITH ASYMMETRIC PRESSURE PROFILE**



(57) Abstract: The present invention discloses an electrochemical generator fed with reactant gases, and in particular a fuel cell fed with a hydrogen-containing gas and with air at near ambient pressure. The electrochemical generator is characterised by asymmetry of the pressure drops localised in the distributing and collecting channels, wherein, in particular, the pressure drop concentrated in the collecting channels is substantially higher than that concentrated in the distributing channels. Moreover, the pressure in the active areas of the generator substantially coincides with the feeding one. Such a result is obtained by differentiating the design of the distributing channels from the one of the collecting channels, whose passage section is lowered and/or whose length is increased and/or whose amount is decreased.



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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/12527

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01M8/02 H01M8/04 H01M8/24

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 999 605 A (HONDA MOTOR CO LTD) 10 May 2000 (2000-05-10)	1-5, 7-9, 11, 15
Y	column 5, paragraph 18 - column 6, paragraph 27 column 8, paragraph 32 - paragraph 37 column 9, paragraph 42 - paragraph 44; claims 1-12; figures 2, 8, 11, 12	12-14
X	US 3 926 676 A (FRIE WOLFGANG ET AL) 16 December 1975 (1975-12-16)	1-4
Y	column 3, line 43 - column 4, line 59 column 6, line 26 - line 66	1-4, 11
Y	US 4 233 146 A (KATTERMANN DIETRICH E ET AL) 11 November 1980 (1980-11-11) column 2, line 35 - column 3, line 68; figures 1a, 1b, 2a, 2b, 2c, 2e	1-4, 11-14
	-/-	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*8\* document member of the same patent family

Date of the actual completion of the international search

31 August 2004

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/12527

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 214 359 A (ALLMANNA SVENSKA ELEKTRISKA AKTIEBOLAGET) 2 December 1970 (1970-12-02) the whole document -----	1-15

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/12527

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 16  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 1.2

Claims Nos.: 16

Present claim 16 relate to an extremely large number of possible apparatus. In fact, the claims contain so many options that a lack of clarity (and conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear (and concise).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/12527

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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